IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of: **WESTPHAL**	Attny Docket No. **80006**
Serial No. **10/655,766**	
Filing Date: **SEPTEMBER 5, 2003**	Art Unit: **2825**
Confirmation No. **6894**	Date Submitted: February 28, 2006
For: **VECTOR LOGIC TECHNIQUES FOR LOGICAL PROCESSING**	

DECLARATION OF JAMES HARDY UNDER 37 C.F.R. § 1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

The undersigned hereby deposes and says:

1. That the undersigned is a Research Professor at Idaho State University.

2. That a true copy of my curriculum vitae is attached hereto as Exhibit A.

3. That I have reviewed the office action by the Examiner and the patent to Scholl and the previous response filed by the applicant.

4. That I work with Dr. Jonathan Westphal, the applicant in the above-identified application, in the Department of Philosophy at Idaho State University as well as working with him on the "COLD" research project for which Dr. Westphal is principal investigator.

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5. That I consider the claims of the above identified patent application to distinguish over the Scholl patent for three reasons—

   1. Scholl does not apply his technique to multilevel logic;
   2. Scholl does not teach the identification and use of opposing couples; and
   3. Scholl's notion of symmetry is essentially different from the present one.

6. That with respect to reason 1, the examiner asserted that "the claims do not recite the multilevel logic is one which includes nested parenthetical expressions, where the innermost set of parenthesis of nested parenthetical expressions are evaluated first before the next outermost set of parenthesis can be evaluated." However, since this is the standard meaning of "multilevel logic" such recitation is implicit in the use of the phase "multilevel logic" used in the claims. Further, none of the examiner's response clearly shows that Scholl does in fact address multilevel logic.

7. With respect to reason 2, The examiner incorrectly claims that Scholl's identification and sifting of symmetric variables anticipates the applicants elimination of opposing couples. However, the examiner provides no justification for this claim. That the claim is false is easily seen as Scholl does not teach that symmetric variables should be eliminated, but only that they should, in many cases, be located side by side prior to applying the sifting algorithm. Further, the applicant's

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"opposing couples" are logic literals whereas Scholl's "symmetric variables" are not.

8. Reason 3 above is sufficient by itself to demonstrate the novelty of claims 1, 4, 5, 6, 7, 8, 11, and 12. That the two concepts of symmetry are different is easily demonstrated by the existence of functions which are symmetrical in one sense but not the other. This was clearly spelled out in the amendment filed September 6, 2005, with examples, which even more surprisingly was not even remarked upon by the examiner.

9. That, the examiner's response throughout is flawed by the confusion of Scholl's use of "symmetric" which is quite different from applicant's use of the same word in the context of the specification. More than anything, this confusion seems to underlie the examiner's persistent conflation of Scholl's teachings and those of the applicant. Once the clear difference between the two concepts of symmetry is spelled out (as was done in the remarks filed with the amendment of September 6, 2005) and the two concepts are kept distinct (as the examiner has failed to do) it is clear that Scholl's work does not anticipate the applicant's in any way.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false

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statements may jeopardize the validity of the application or any patent issued thereon.

And further deponent sayeth not.

James Hardy

Exhibit A

James Hardy

Curriculum Vitae

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Pocatello ID 83201
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jimhardy@isu.edu

Education

Ph.D.	1998, Philosophy, Indiana University
M.A.	1991, Philosophy, University of Washington
B.A.	1988, Philosophy and Psychology (double major), Utah State University

Areas of Specialization Logic, Philosophy of Science and Mathematics, Philosophy of Language/Linguistics

Areas of Competence Metaphysics, Epistemology, Environmental Ethics

Principle Academic Employment

2004- Research Professor, COLD Project, Idaho State University.

2004- Part-Time Faculty, Department of Philosophy, Idaho State University

2003-04 Visiting Assistant Professor, Texas Tech University, Department of Philosophy.

2000-03 Visiting Assistant Professor, University of Illinois - Urbana Champaign, Department of Philosophy.

1998-00 Adjunct Faculty, University of California Los Angeles, Department of Philosophy.

Publications

"Logic as a Vector System" with Jonathan Westphal, *Journal of Logic and Computation*, vol. 15 no. 5, (2005) pp. 751-765.

"Vector Logic Theorem Proving" with Jonathan Westphal, John Caulfield, and Lei Qian, *Proceedings of the Joint Conference on Information Sciences* (July 2005)

"How to Catch Achilles: an introduction to the theory of infinitals", *Logique et Analyse*, 185-188 (2004) pp 425-444.

Review of *Understanding the Many* by Byeong-Uk Yi. *Notre Dame Philosophical Reviews*, February 2003. Available online: http://ndpr.icaap.org/content/archives/2003/2/hardy-yi.html

Review of *Studies in Formal Logic* by Biswambhar Pahi. *Journal of Indian Council of Philosophical Research* vol. 18 no. 2 (2001) pp. 275-277.

"Three Problems for the Singularity Theory of Truth." *Journal of Philosophical Logic* vol. 26 no. 5 (October 1997) pp. 501-520.

"Burdens of Proof: Why Modal Ontological Arguments Aren't Convincing." *Journal of Philosophical Research* vol 21 (1996) pp. 321-330.

"Is Yablo's Paradox Liar-Like?" *Analysis* vol. 55 no. 3 (July 1995) pp. 197-198.

In preparation

"The Philosophical Importance of Variables" solicited by *Journal of Indian Council of Philosophical Research*
"Holey Propositions: An Account of Instantial Reasoning"
"Infinity, a philosophical account" invited chapter in Festschrift for Bill King.

Teaching Experience (Including courses that I am scheduled to teach this spring. Courses with a * I have taught multiple times.)

Lower Division Courses
- Critical Thinking *
- Symbolic Logic *
- Introduction to Philosophy *
- Introduction to Ethics
- Environmental Ethics *
- Philosophy of Technology

Upper Division Courses
- Epistemology *
- Metaphysics *
- Philosophy of Mind
- Philosophy of Language*
- Advanced Logic (Metatheory) *

Graduate and Special Topics Courses
- Issues in Logic and Epistemology (Infinity)
- Environmental Ethics
- Topics in Logic and Semantics * (Situation Semantics, Liar Paradox)

Other
- Foundations of Inquiry: This course is required of all freshmen during their first term. It is primarily an interdisciplinary course in critical thinking, but it also serves to introduce the students to the University environment.
- Advocacy and Argument *: This course combines logical and rhetorical approaches to critical thinking. It was taught in a Communications Department.
- Co-directed Critical Thinking Summer Institute for Primary and Secondary School Teachers: This is a summer institute to teach K-12 teachers the fundamental techniques of critical thinking and how to integrate them into the K-12 curriculum. Duties included both design and presentation of a week long intensive institute.
- Designed and taught a version of Introductory Logic as a correspondence course.

Presented Papers

"Chasing Infinity" presented at Texas Tech University philosophy colloquium series. October 14, 2003
"Catching Achilles" presented at the Midwest Philosophy of Mathematics Workshop, South Bend, Indiana, November 9, 2002.
"How (not) to catch Achilles" presented at the Indiana University Logic Group lecture series, Bloomington, Indiana, April 17, 2002.
"On the Interpretation of Variables" presented at the University of California - Los Angeles Logic Colloquium, May 2000.
"Zeno and Cantor" presented at the University of Redlands Philosophy Department, November 1999.
"A New Version of Zeno's Paradox" presented at the University of California Los Angeles Philosophy Club, May 1999.
"A Theory of x" presented at the University of California - Los Angeles Philosophy Colloquium Series, March 1999.
"Euclid's Arbitrary Triangle" presented at the California State Polytechnic University at Pomona Department of Mathematics Colloquium, February 1998
"A Sketch of a Theory of Variables", joint with Anil Gupta, presented at a joint meeting of the Indiana University Logic Group and Philosophy Department, January 1998.
Comments on "The Lord Scroop Fallacy", presented at APA Central Division, April 1997.
"Context Dependent Quantifiers and Universalized Conditionals," presented at APA Pacific Division, March 1997.
"Representational Generality," presented at the Indiana University Logic Group lecture series, Bloomington, Indiana, October 1996.
"Three Problems for the Singularity Theory of Truth," presented at the 10th International Congress of Logic, Methodology and Philosophy of Science, Florence, Italy, August 1995.
"Derrida, Husserl, and Frege on Nonsense and Meaning," presented at the Indiana University Philosophy Graduate Student Conference, Bloomington, Indiana, May 1993.
"Modal Ontological Arguments," presented at the 43rd Annual Northwest Conference in Philosophy. Seattle Washington, Nov. 8, 1991.

Academic Service and Professional Development

2003 Reviewer for *Synthese*
2003 Reviewer for *Philosophy of Science*
2000 Reviewer for Southwest Philosophy Review
2001 "Using Active Learning in Teaching Critical Thinking". One day workshop. University of Illinois at Urbana-Champaign.
1997 "Writing in the Disciplines," Week long faculty workshop on the use of writing as a teaching tool. California State Polytechnic University at Pomona.
1994-95 Faculty Recruitment Committee, Indiana University Department of Philosophy

Membership in Professional Associations

American Philosophical Association
Association for Symbolic Logic

Languages Spanish - Fluent, French - Moderate

References

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Graduate Coursework

University of Washington

Introductory and Survey Courses
Introduction to Social and Political Philosophy
Philosophy of Language
Metaphysics
Epistemology
Philosophy of Plato
Intermediate Logic
Intermediate Indian Philosophy
Modal Logic
Philosophy of Science
Wittgenstein

Seminars
Seminar on Derrida
Seminar on Foucault
Seminar in Ethics (Gibbard and Darwall)
Seminar in Political Philosophy (Raz)
Seminar in Metaphysics (Modal Metaphysics)
Seminar in Recent Analytic Philosophy (Dummett)
Seminar in Philosophy of Language (Propositional Attitudes)
Seminar in Logic (Incompleteness)

Indiana University

Introductory and Survey Courses
Ethics
Advanced Logic (Incompleteness)
Introduction to Cognitive Science
Survey of Mediaeval Philosophy
History of the Problem of Universals in the Mediaeval Period

Seminars
Topics in Mediaeval Philosophy (audited)
Seminar in Metaphysics (Theories of Truth)
Topics in Self Reference
Topics in Logic (Logic of Information Flow)
Topics in Logic (Diagrammatic Reasoning)
Seminar in Mathematical Logic (Revision Theory of Truth)

Mathematics Courses
Set Theory
Advanced Set Theory
Recursion Theory